ABSTRACT OF THE INVENTION

A switch fabric implemented on a chip includes an array of cells and an I/O interface in communication with the array of cells for permitting exchange of data packets between the array of cells and components external to the array of cells. Each cell includes a transmitter in communication with the I/O interface and in communication with every other cell of the array, the transmitter being operative to process a data packet received from the I/O interface to determine a destination of the data packet and forward the data packet to at least one cell of the array selected on a basis of the determined destination. Each cell further includes a plurality of receivers associated with respective cells from the array, each receiver being in communication with a respective cell allowing the respective cell to forward data packets to the receiver, where the receivers are in communication with the I/O interface for releasing data packets to the I/O interface. In this way, the transmitter in a given cell functionally extends into those cells where dedicated receivers are located, reducing transmitter memory requirements and allowing the switch fabric to be implemented on a single chip.